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16 Razorback Whale

42

accctgaccatgaacctaa-

aaactcaaaaca

Pilchard T G A G A A C T G A T C C T C A C T C A T A C T T T G A A G C A C G C T T C A C T A G G A A G C T A A A C T G G C C T A G C G T C A G C C T T T T A A G C T G A A G A T T G G T G A C C C C A A C C A C C T C T A G T G A C A T G C C C A A A
 Anchovy C G A A A A T T G A T C A T C A C T C A T A A T T G A A G A C G C C T C A T C A G A A G C T A A A A - G G A T C T A G C G T C A G C C T T T T A A G C T G A A G T T T G G T G A C T C C G C C A C C T C T G G T G A C A T G C C T C A A T
 Salmon C G A G A A A T G A T C C A C T A T A A T A C T T G A A G A G C C T C A C T A A G A A G C T A A A T C G G A A T A G G T A G C T T T T A A G C T T T A A G C T G G A A G C A G G T G A C T C C C A C C A C C C T T A A T G A A A T G C C C C A G T
 Codfish T G A A T C A T G A T C A T C T T T A A T A C T T G A A G A C G C C T C A C T A A G A A G C T A A T A T G G T T A A G C A C C A G C C T T T A A G C T G A G A G A G G G A C A C C C - - T C C C C T T A A T G A C A T G C C C C A A T
 Chicken T G A A C C C T G A T C C T C A C T A C T G T C - - - A T C T T A A C C A T T A A G A A G C T A T - - - - G C A C C A G C A C T A G C C T T T T A A G C T A G A G A G G G A C A C C C - - T C C C C T T A A T G A C A T G C C C C A A T
 Cattle T G A A A A A T G A T C G C T C A A T A T T - - - A - T A A A T C A C T A A G A A G C T A T - - - - A T - A G C A C T A A C C T T T T A A G T T A G A G A T T G A G A G C C A T A T A C T C T C T T G G T G A C A T G C C G C A A C
 Sheep T G A A A A A T G A T C G C A T C A A T A C T - - - A - T A A A T C A T C A A G A A G C T A T - - - - C C A G C G T T A A C C T T T T A A G T T T A A A G A C T T G A G A A T A T T A T T C T C C T T G A T A T T G C C A G A A C
 Pig C G A A A A A T G G T C A C A C A T C A A T A T T - - - A A C A G G T T C A T T G A A A G C T A G - - - - T C - A G C A C T A A C C T T T T A A G T T A G A G A T C G G A G C C T A A A T C T C C C T C A A T T G T A T T G C C A C A C

Fish3-3 → atp8 (7963 - 8130)

Pilchard T A A A A C C C G C C C C T G G T T T G C A A T C T G T C T C T C T C A C T C A G A T T T T C I A C A G T A A I C C C C C C A A A A G T T C I A G C C A C A C T T C A G A A C G A C C A T C A C T A C C A I G A G A C I G A G A
 Anchovy T A A C C C C G C C C T T G A T T T T A T T T A T C C T T C A C T T A C A T T T T A T T A T T C C C T C C A A A G T T T G G C G A C G A G T T C A C T A A G A C C T A C A G T A A T G G C G C C C A G A
 Salmon T C A A C C C C G C C C T G A T T G C T A T T T A G T A T T C T C A T G A C T G G T T T C C T A A C T G T A T T C C T C T A A A G T A C T C G G C C A C A C C T T C A A A A T A G C C T A C T T C A C A A G A C A C T G A A A
 Codfish T A A C C C C G C C C C T G A T T A T A T C T T C A T T A C A T G A G C A A T T T C C T A A C T A T T C T C C C C A A A A G T A A T A G C A C A C A C T T C C C A A A T G A A C C T T C C C C A G G T A T A C A A
 Chicken T A A C C C A A C C C A T G A T C C C A T A C T C C T A A C T T G A T T C A C C T T C T G T A T C A A C C C A A C C T T T C A T T C A C T A C A A A C A C A C C C T - - - G C A A A C A A A A T T A C A A
 Cattle T A G A C G T C A C A C A T G A C A T G A T T A C A A T T C T T G A C C C T T T A T C A T C T T T C A C T A A A A G T T C A A A C A C A - A C T T T A T C A A A T C C A A G A C T G A C A C A C A A A A
 Sheep T A G A C A C A T C A A C G T T A C A A A T T C T A C A A T T T T A G T C T C T G A T T T T C A C T A A A A A T C T C A A A C A C A - A C T T C T A C C A C A C C C A G A A T T A A T A A C A C A C A A A
 Pig T A G A T A C C A C A T G A T T C A A T T A C A A T T A C A A T A T T A T T T A T T C C A A C T A A A A A T C T C A A A C T A C T A C A C C A G C A - A G C C C A G A A T C A A T T G A A C A C T C A A A

Fish3-2

Pilchard T A A A A C C C G C C C C T G G T T T G C A A T C T G T C T C T C T C A C T C A G A T T T T C I A C A G T A A I C C C C C C A A A A G T T C I A G C C A C A C T T C A G A A C G A C C A T C A C T A C C A I G A G A C I G A G A
 Anchovy T A A C C C C G C C C T T G A T T T T A T T A T C C T T C A C T T A C A T T T T A T T A T T C C C T C C A A A G T T T G G C G A C G A G T T C A C T A A G A C C T A C A G T A A T G G C G C C C A G A
 Salmon T C A A C C C C G C C C T G A T T G C T A T T T A G T A T T C T C A T G A C T G G T T T C C T A A C T G T A T T C C T C T A A A G T A C T C G G C C A C A C C T T C A A A A T A G C C T A C T T C A C A A G A C A C T G A A A
 Codfish T A A C C C C G C C C C T G A T T A T A T C T T C A T T A C A T G A G C A A T T T C C T A A C T A T T C T C C C C A A A A G T A A T A G C A C A C A C T T C C C A A A T G A A C C T T C C C C A G G T A T A C A A
 Chicken T A A C C C A A C C C A T G A T C C C A T A C T C C T A A C T T G A T T C A C C T T C T G T A T C A A C C C A A C C T T T C A T T C A C T A C A A A C A C A C C C T - - - G C A A A C A A A A T T A C A A
 Cattle T A G A C G T C A C A C A T G A C A T G A T T A C A A T T C T T G A C C C T T T A T C A T C T T T C A C T A A A A G T T C A A C T A A A A G T T C A A A C A C A - A C T T T A T C A A A T C C A A G A C T G A C A C A C A A A A
 Sheep T A G A C A C A T C A A C G T T A C A A A T T C T A C A A T T T T A G T C T C T G A T T T T C A C T A A A A A T C T C A A A C A C A - A C T T C T A C C A C A C C C A G A A T T A A T A A C A C A C A A A
 Pig T A G A T A C C A C A T G A T T C A A T T A C A A T T A C A A T A T T A T T A T T C C A A C T A A A A A T C T C A A A C T A C T A C A C C A G C A - A G C C C A G A A T C A A T T G A A C A C T C A A A

Fish3-1

Pilchard A A G C T A A G C C - - - C G A G C C C T G A A C C T G A C C A T G A T A C T A A G C T T C T T G A C A G T A T A A G C C C C T C A T A C C T A G G A A T C C C A C T G A T T G C A G T G G C A A T C G C C T C C C A T G A C C C
 Anchovy A A C C C A A A C C - - - T G A A T C C T G A A A C T G A C C A T G A T A C T A A G C T T C T T C G A T C A A T T T G C A A G C C C A A A T T A T A G G A A T T C C T T A A T T G C C C T G G C A A T T G T T C T C C A T G A A T T C
 Salmon A A G C T A A A C C - - - T G A A C C C T G A A A C T G A C C A T G A C A C T A A G C T T C T T G A C C A A T T A T A G C C C A C G T A C T A G G T A T T C C A C T T A T T G C T G A C A C T A A C C C T T C C A T G A A T C
 Codfish C T C C T A A A A C - - - T G C C C C C T G A A A C T G A C C A T A G C C T C T T G A C C A A T T T C T A G C C C T T C A T T C C T G G A A T T C C C A A T T T A A T A G C C T A G C T T T A C C C T G A C T T T
 Chicken C A A C T A A A C C - - - C A C C C C C T G A A C C T G A C C A T A A G C T A A G C T T C T T C G A C C A A T T C T C A A G C C C T G C C T A C T A G G A A T C C C C T A A T C C C T C C A T C A C T C C T T C T C A G A C C C C T C C
 Cattle A T A T T A A A C A A A A C C C C T T G A G A A A C A A A A T T A T T A A C C T T T T A T T A C C C C T G A A T T T A G G C T T C C C C T C G T A A C C C T T A T T A G C T A C T A T T C C C A A G C C C T A C
 Sheep A C A C G A A C A A A A T A C T C C T T G A G A A A C A A A A T T A T T G C C T C T T C A T T A C C C C T A T A A T T T T G C T C C C C C T G T A C C C T A T T G T T T A T T C C C T A G C C T A T
 Pig A C T C A A A A C A T A G A C C C C T T G A G A A A T A A A A T G A C G A A A A T C A T T T G C C T C T T T A T T G C C C C A C G A T A A T A G G A C T A C C T A T T G T C A C C T T A A T T A T T A T T C C A A G C T T A C

Fig. 4

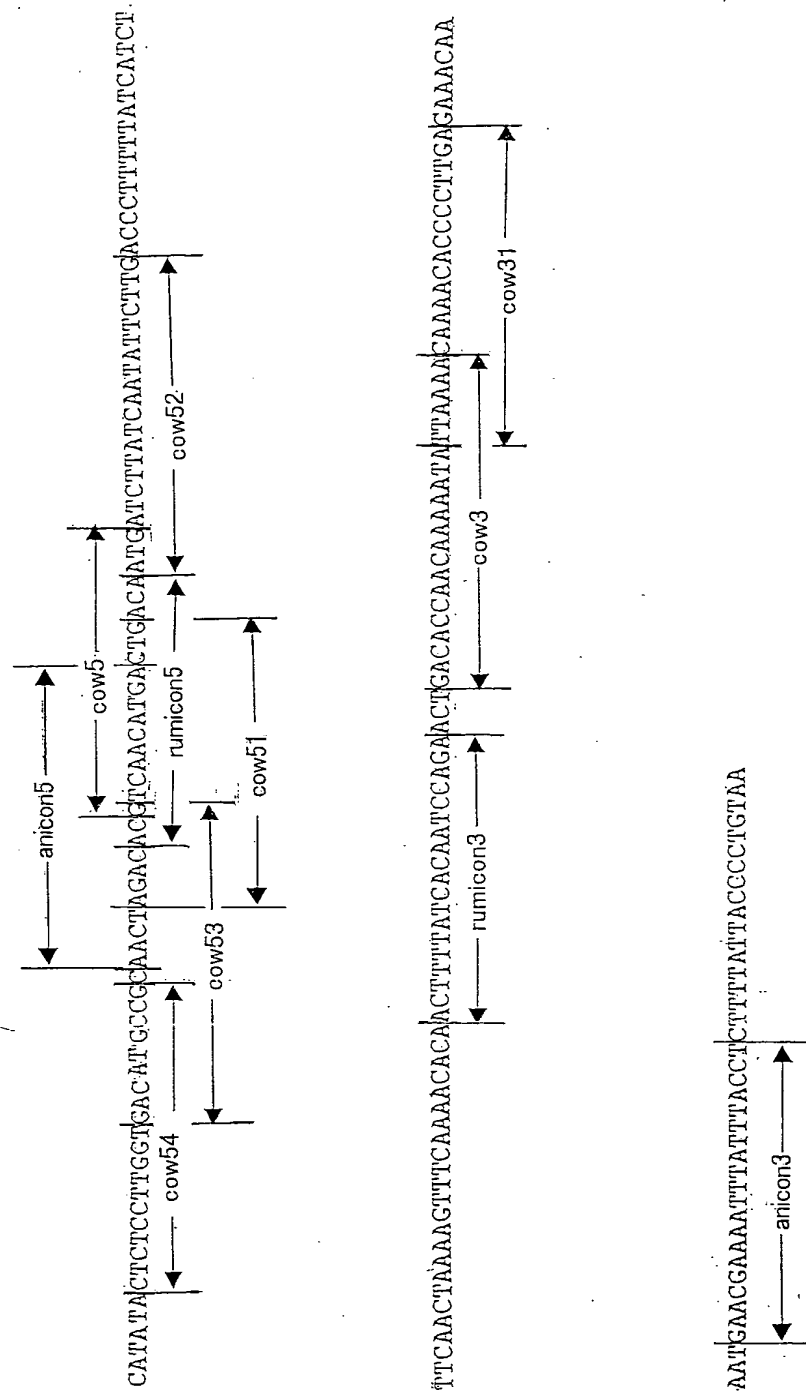


Fig. 5

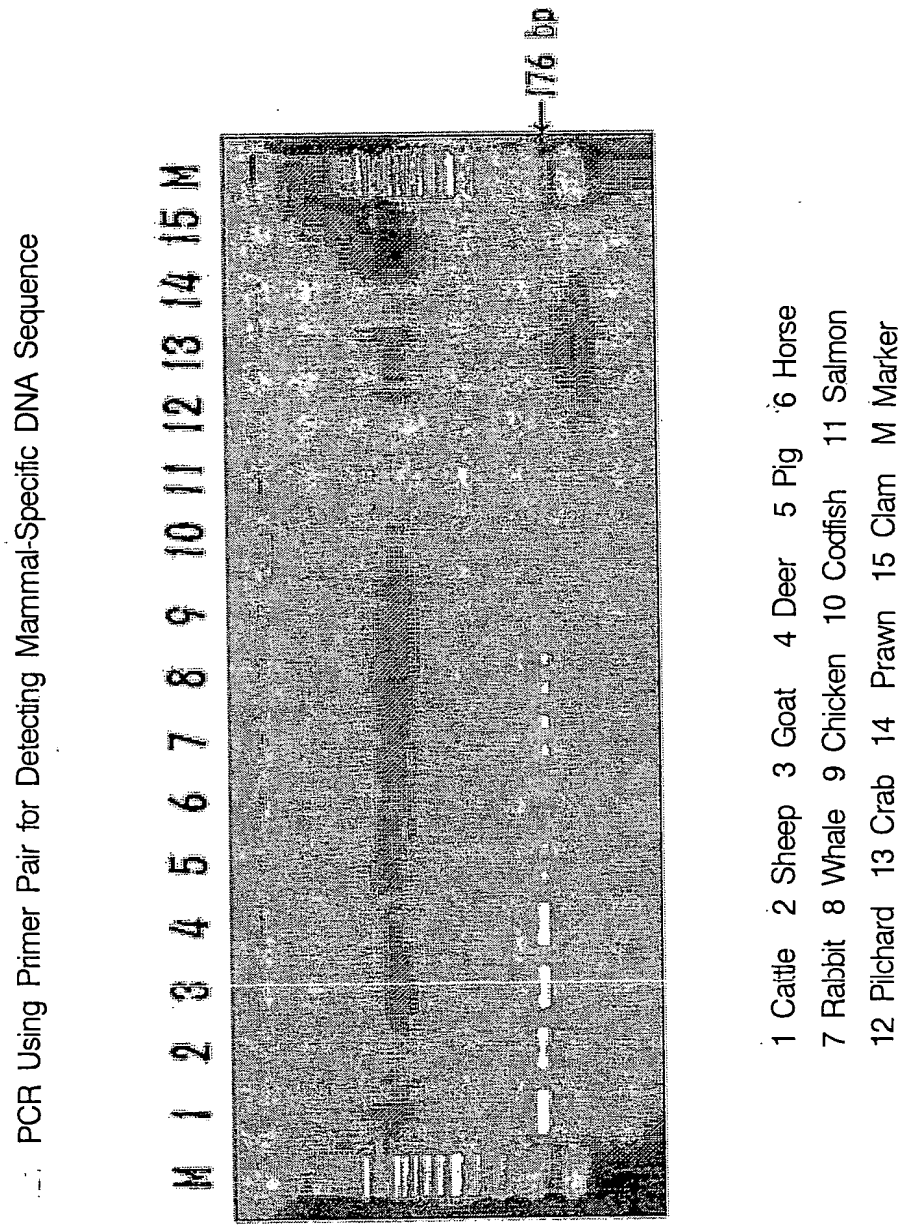


Fig. 6

PCR Using Primer Pair for Detecting Ruminant-Specific DNA Sequence

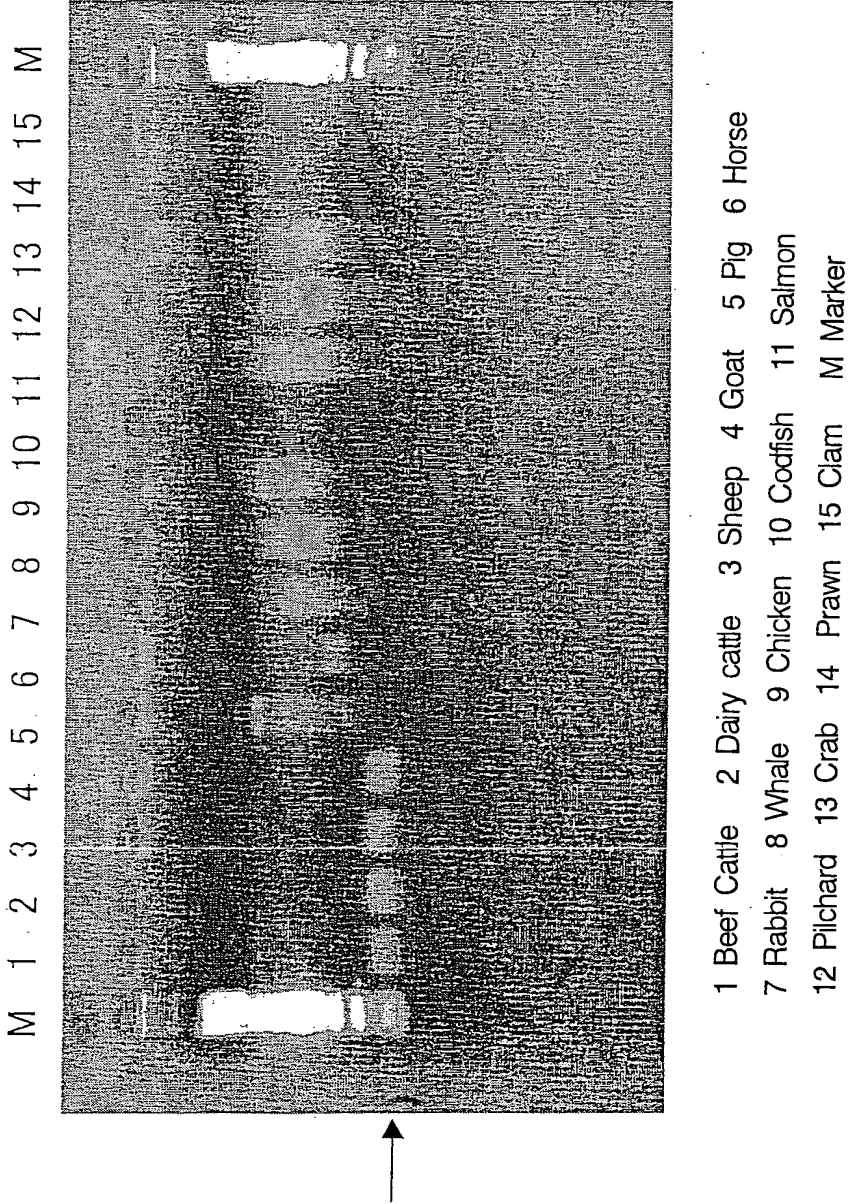


Fig. 7

PCR Using Primer Pair for Detecting Ruminant-Specific DNA Sequence

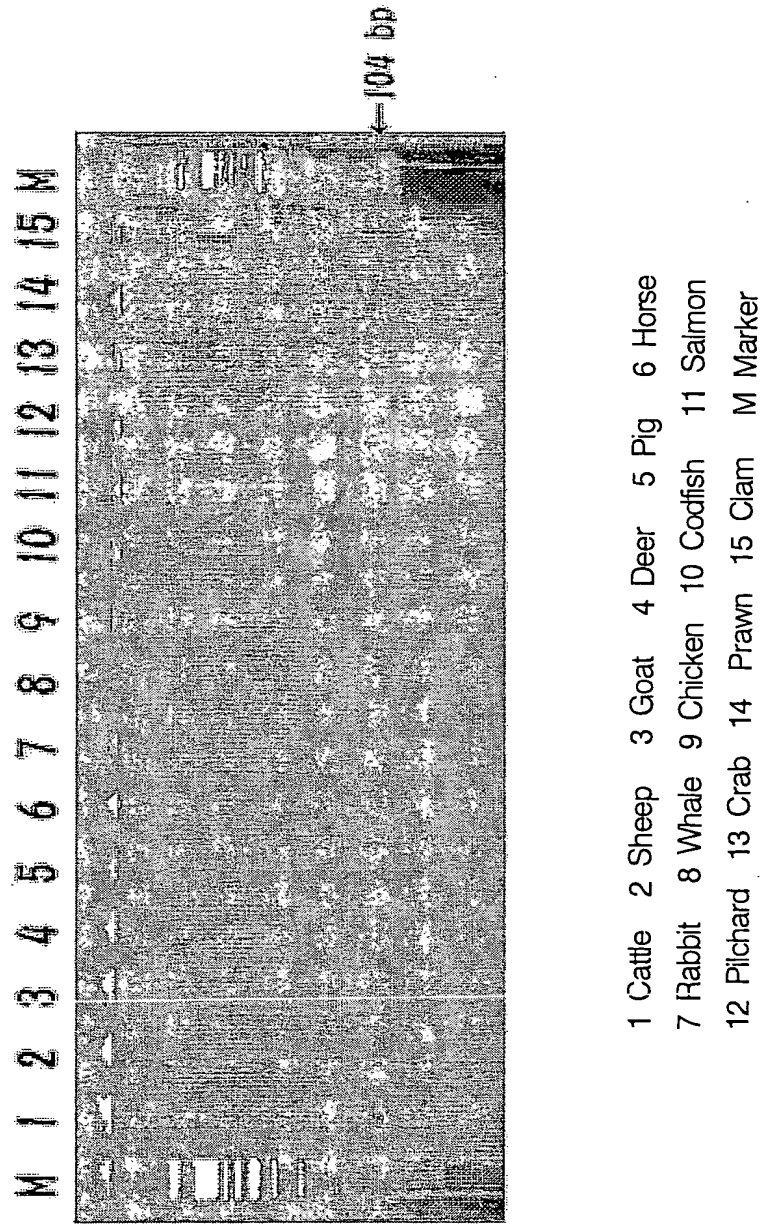


Fig. 8

PCR Using Primer Pair (cow51 and cow3) for Detecting
Cattle-Specific DNA Sequence

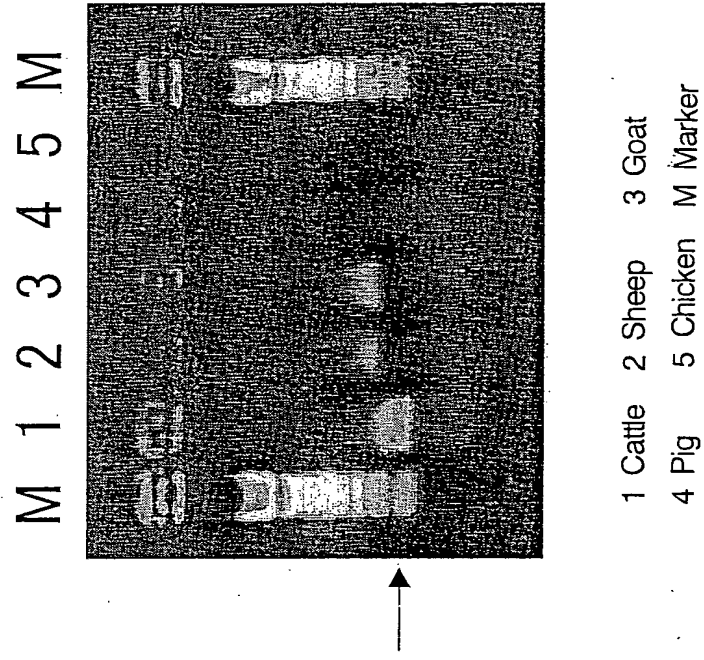


Fig. 9

Comparison of Detection of Cattle-Specific DNA Sequences

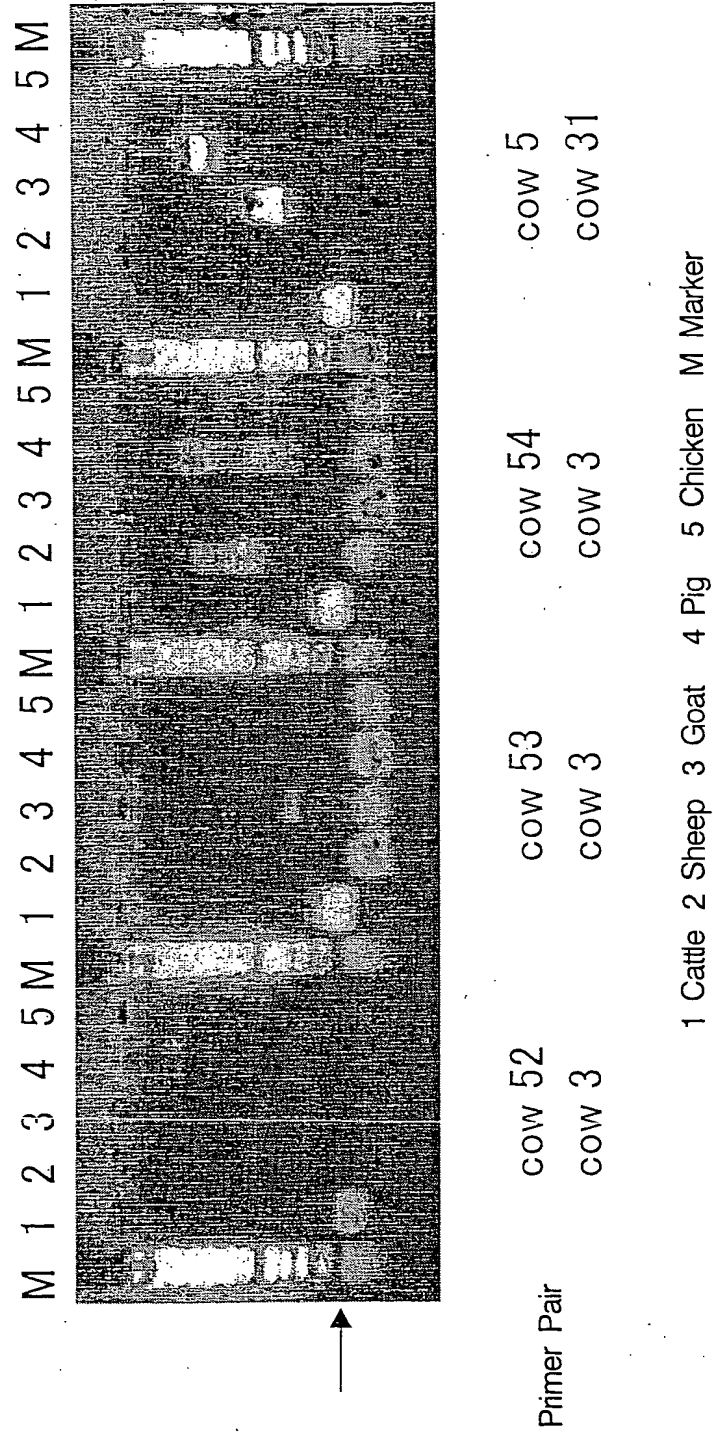


Fig. 10

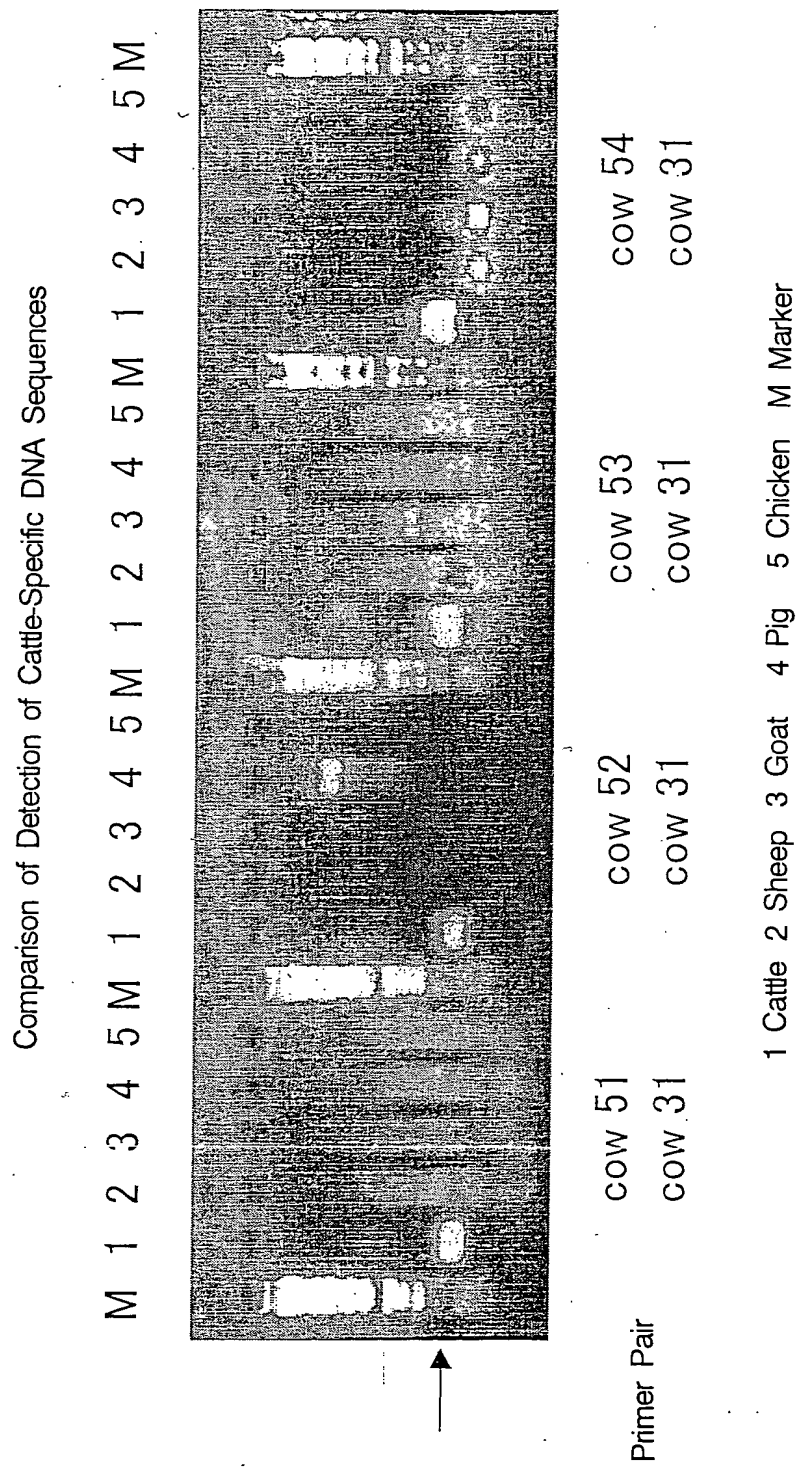


Fig. 11

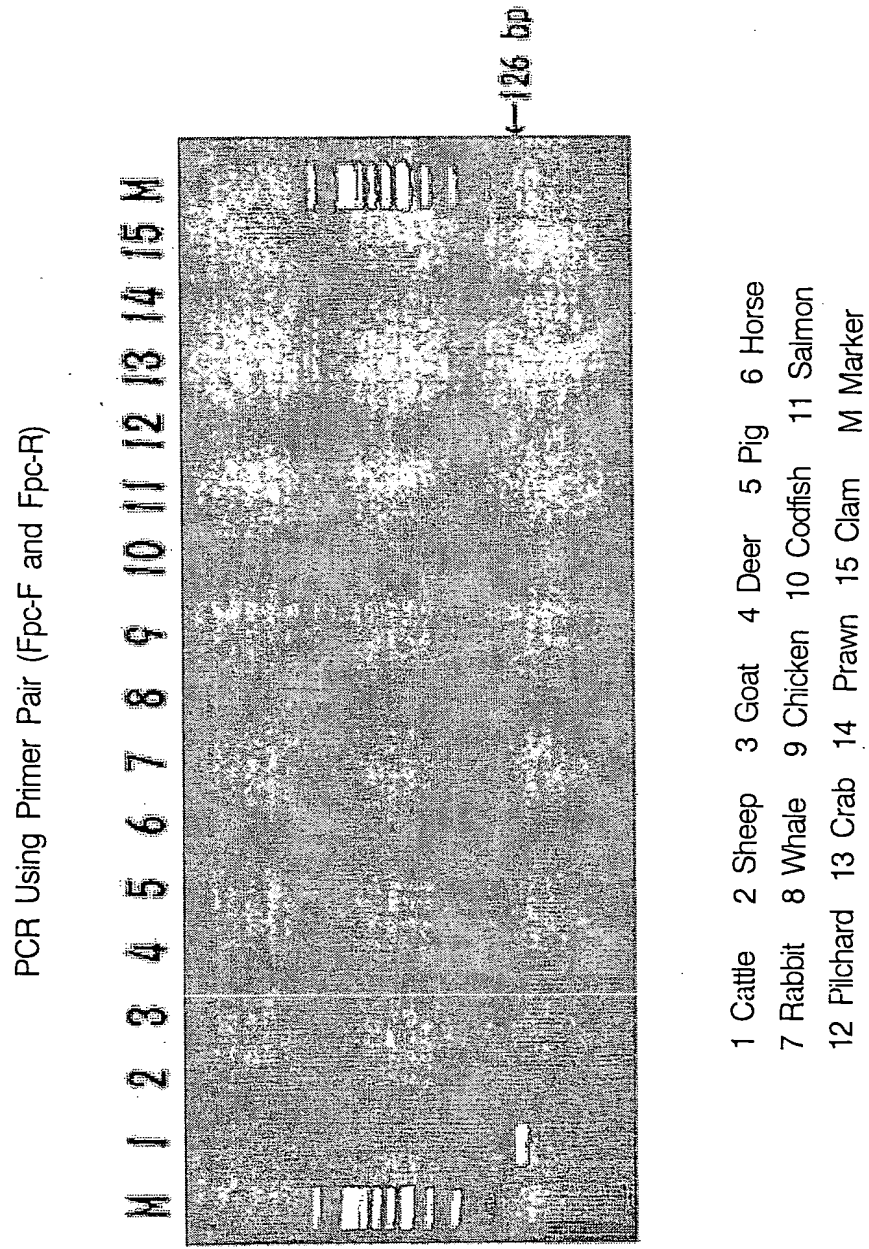


Fig. 12

PCR Using Pig-Specific Primer Pair

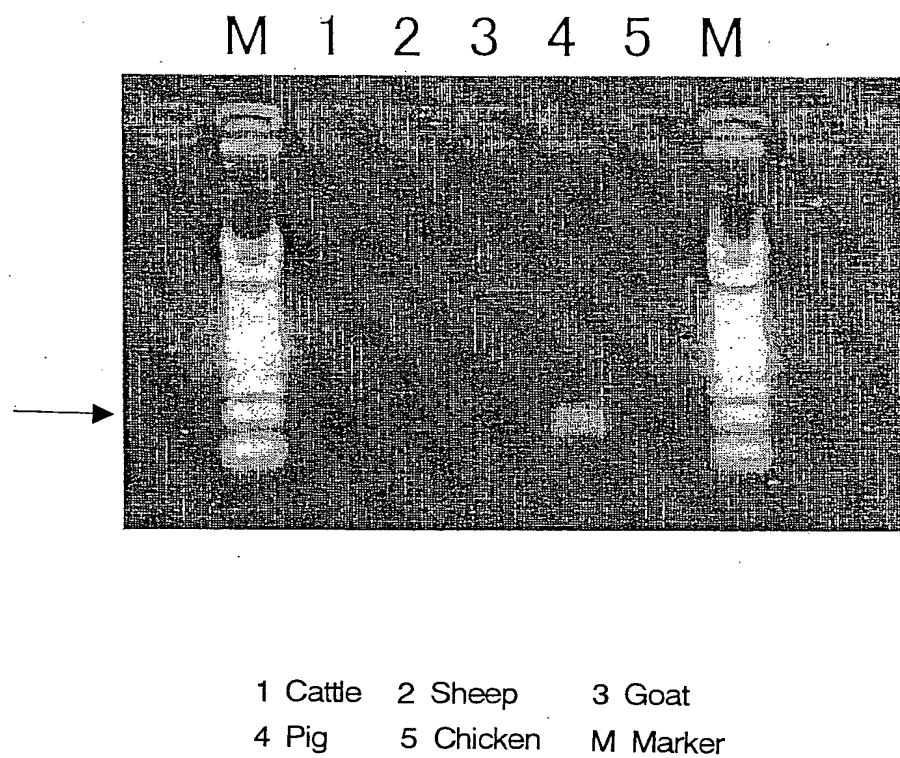
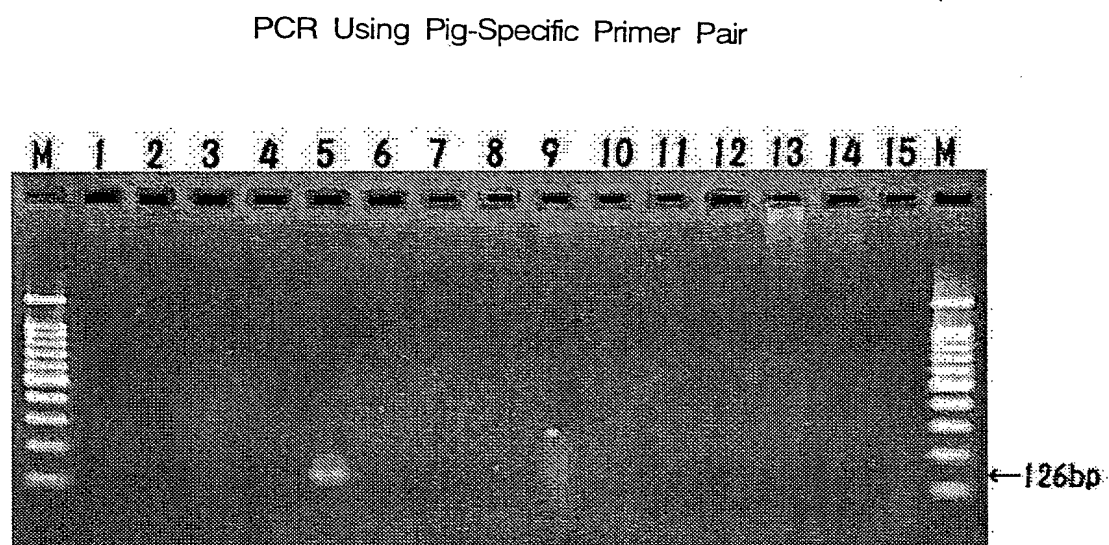


Fig. 13



1 Cattle 2 Sheep 3 Goat 4 Deer 5 Pig 6 Horse
7 Rabbit 8 Whale 9 Chicken 10 Codfish 11 Salmon
12 Pilchard 13 Crab 14 Prawn 15 Clam M Marker

Fig. 14

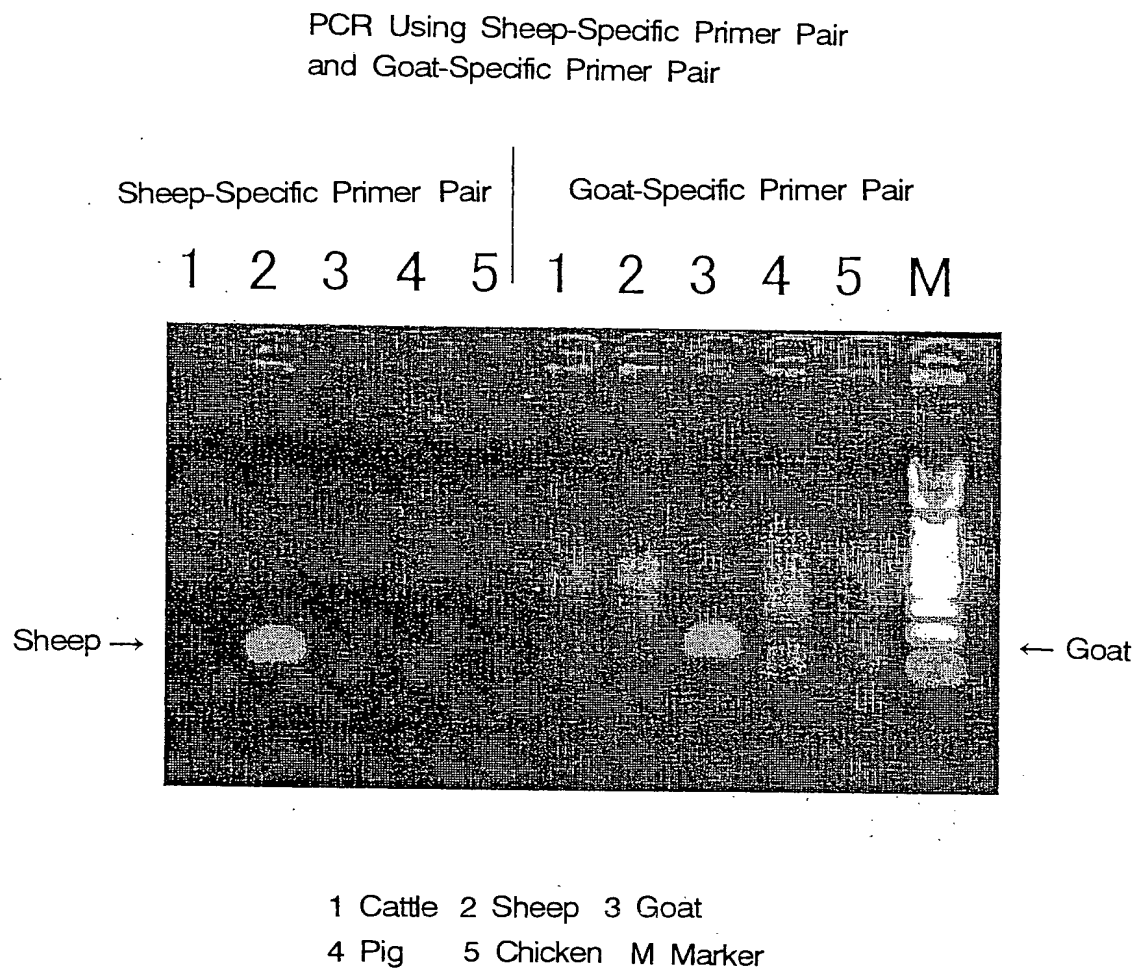
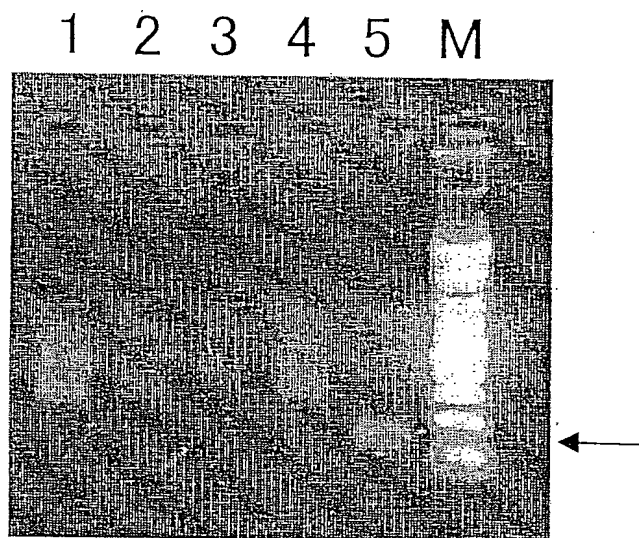


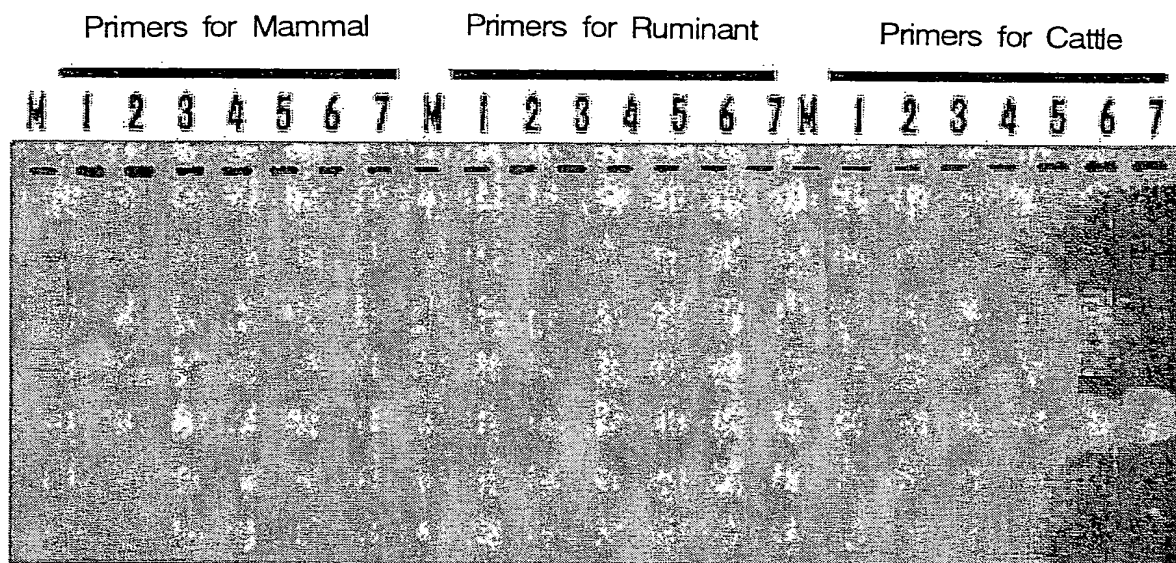
Fig. 15

PCR Using Chicken-Specific Primer Pair



1 Cattle 2 Sheep 3 Goat
4 Pig 5 Chicken M Marker

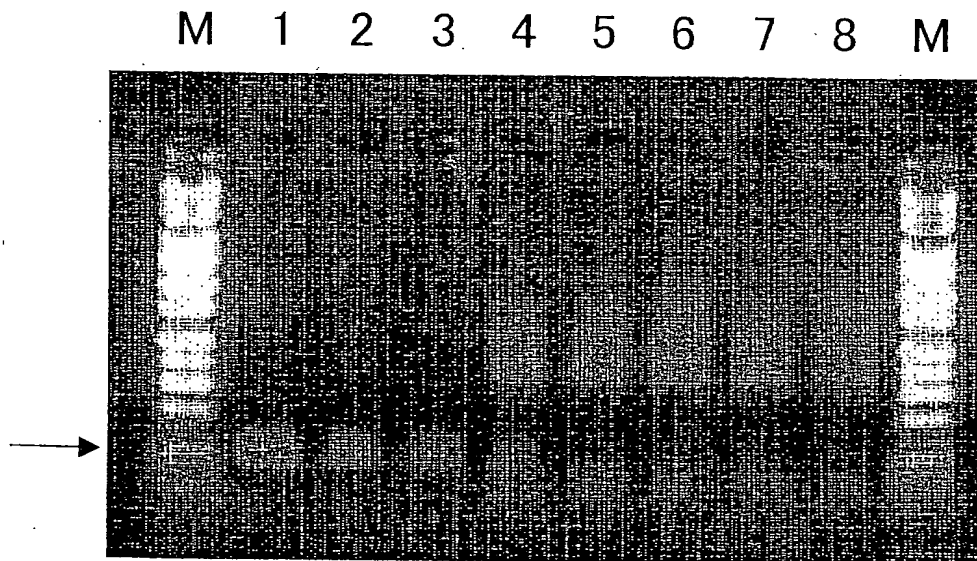
Fig. 16



- 1 Meat and Bonemeal
- 2 10% Meat and Bonemeal in Mixed Feed
- 3 1% Meat and Bonemeal in Mixed Feed
- 4 0.1% Meat and Bonemeal in Mixed Feed
- 5 0.01% Meat and Bonemeal in Mixed Feed
- 6 Mixed Feed
- 7 Negative Control (Without DNA Template)
- M Marker

Fig. 17

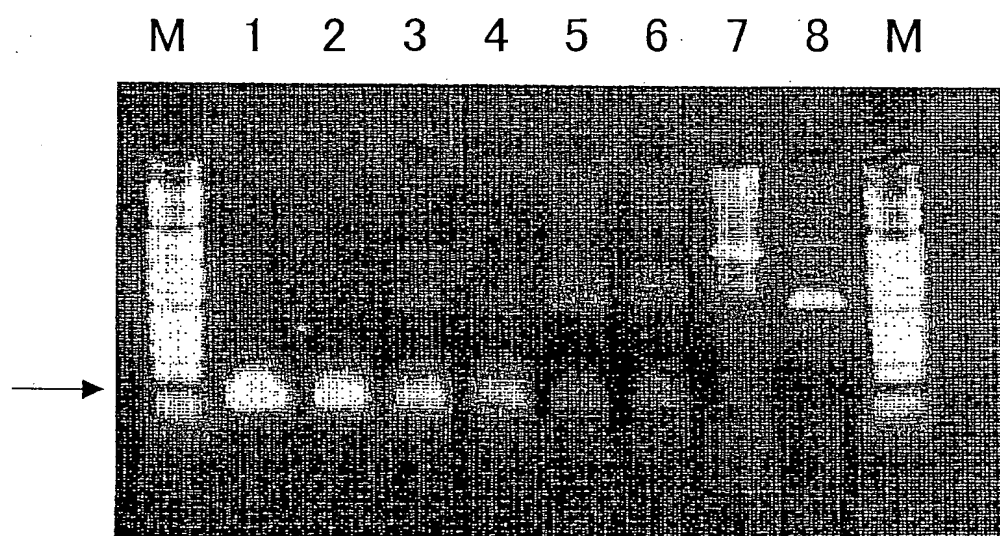
Detection of DNA Sequence in Mixed Feed containing Meat and Bonemeal
Using Ruminant-Specific Primer pair



- 1 Meat and Bonemeal
- 2 10% Meat and Bonemeal in Mixed Feed
- 3 1% Meat and Bonemeal in Mixed Feed
- 4 0.1% Meat and Bonemeal in Mixed Feed
- 5 0.01% Meat and Bonemeal in Mixed Feed
- 6 0.001% Meat and Bonemeal in Mixed Feed
- 7 0.0001% Meat and Bonemeal in Mixed Feed
- 8 Mixed Feed
- M Marker

Fig. 18

Detection of DNA Sequence in Mixed Feed containing Meat and Bonemeal
Using Cattle-Specific Primer pair



- 1 Meat and Bonemeal
- 2 10% Meat and Bonemeal in Mixed Feed
- 3 1% Meat and Bonemeal in Mixed Feed
- 4 0.1% Meat and Bonemeal in Mixed Feed
- 5 0.01% Meat and Bonemeal in Mixed Feed
- 6 0.001% Meat and Bonemeal in Mixed Feed
- 7 0.0001% Meat and Bonemeal in Mixed Feed
- 8 Mixed Feed
- M Marker